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AUTHOR Charner, Ivan
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ABSTRACT

The interaction of demographic and economic shifts has led to, and will continue to effect, changes in the postsecondary education system and institutions. Demographic shifts include aging of the population, more women in the paid labor force, and increased numbers of minorities. Economic shifts include the growth of the information sector, service sector growth, industrial sector shrinkage, a boom in self-employment, and technological advancement. Ways in which projects supported by the Fund for the Improvement of Postsecondary Education have responded to these demographic and economic factors are described. (JDD)

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POSTSECONDARY EDUCATION
FOR A
CHANGING ECONOMY PROJECT

DEMOGRAPHIC AND ECONOMIC CHANGES AND POSTSECONDARY EDUCATION

IVAN CHARNER

NATIONAL INSTITUTE FOR WORK AND LEARNING

U.S. DEPARTMENT OF EDUCATION
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National Institute for Work and Learning
1302 18th Street, N.W., Suite 501, Washington, D.C. 20036

DEMOGRAPHIC AND ECONOMIC CHANGES AND POSTSECONDARY EDUCATION*

Ivan Charner

National Institute for Work and Learning

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Postsecondary education policies and practices are developed in response to a complex set of factors.. As we have moved through the 20th Century a number of demographic and economic factors have changed. The interaction of these demographic and economic shifts is the force that has led to and will continue to effect changes in our postsecondary education institutions and system. These demographic and economic factors are discussed in terms of their trends and in terms of how a cluster of projects supported by the Fund for the Improvement of Postsecondary Education (FIPSE) have directly responded to them.

Demographic Shifts

The direction of changes in the composition of the U.S. population and in the composition of its labor force has direct and indirect consequences for postsecondary education policies and practices.

Aging of the population. Since the baby boom of the 1940's and 50's, the U.S. population has been aging. The 1980's and 1990's will see the baby boom generation move into middle age, and by the year 2000 the median age of the U.S. citizenry will be almost 35. An estimated 187 million adults 21 years old or older (an increase of 50 million over 1976) will comprise the population. It is not surprising that all of the FIPSE projects are concerned with the adult population. They represent the new group of

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students for postsecondary education today and far into the future. The projects are concerned with all types of adults, from young to old, and from those requiring basic literacy skills to those needing advanced scientific training.

More women in the paid labor force. The numbers and proportion of women in the paid labor force have been steadily increasing. It is estimated that women will comprise 65 percent of all new hires during the next ten years and half of the labor force by the end of this century. The READI project of the University of Idaho, recognizing this growth, has extended verbal, mathematical, and computer literacy training to rural adult women in Idaho. Adult women are one of the primary groups of learners served by the Rio Salado (AZ) Community College project which developed one-year AA degree curricula in a number of technological areas.

Increased numbers of minorities. The proportion of Blacks and Hispanics in the U.S. workforce has been steadily increasing. By the year 2000 these two groups together will constitute almost one-quarter of the workforce. This increased proportion of minorities has been felt by service organizations, elementary and secondary schools, and postsecondary education and training. In direct response to high unemployment rates among its urban minority population and the need for economic revitalization on its eastside, the Charleston (South Carolina) Higher Education Consortium, with the National Institute for Work and Learning (NIWL), developed the TECPLAY project. Housed in a neighborhood-centered Business Technology Center operated by Control Data Corporation, the project combines features of a neighborhood-based street academy (including a community-outreach person for recruiting and follow-up) with the operational control of the area's community college, the influential

political and financial support of city government, and the credibility of location in a small-business "incubator" facility. These environmental factors are combined with computer-assisted basic skills and G.E.D. curriculum (PLATO system) and small group career development and counseling to provide the "hi-tech/high-touch" support structure so crucial for motivating disadvantaged youth.

Economic Shifts

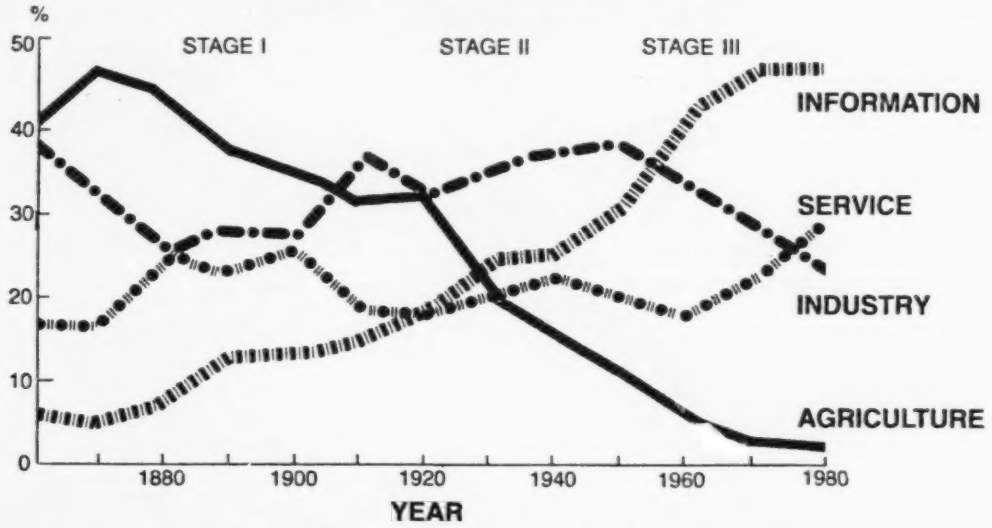
Major economic shifts and the resulting changes in the employment sector have occurred over the past two decades and further shifts are expected through the first quarter of the next century. Some of these shifts have been or will be dramatic while others will be more gradual. What we produce, how we produce, the way we work, and the character of jobs are changing and will continue to change. While the speed of these changes has clear implications for postsecondary education policies and practices, it is the changes themselves that will have the major impact on the future directions of postsecondary education. In addition to economic shifts, new applied technologies have affected every sector in the labor force. The high technology revolution is all around us: in the office and at the workbench; in our communication, transportation and health care systems; and in our houses. The growth of these technologies is sure to continue, but the implications for employment, social relations, education, and personal development are yet to be fully recognized. Questions that are being raised about the implications include:

- Will increases in computers result in greater free time for educational and leisure pursuits and are people ready to handle these changes?
- Will home offices and increases in cottage industries impact social relationships among adults?
- Will mid-career adult workers be forced to return to school or to be trained in computer related skills?

Growth of information sector. In the late 1950's jobs in the information sector, including the creation and transmission of information, became the principal sector of the U.S. labor force and the principal source of economic output. As the graph suggests, the growth of this sector has been continuous since the late 1800's. About half of all workers are employed in this sector and while the slope of the curve is expected to level off, due to automation and other technological advances, this sector is expected to remain the dominant employer into the next century.

The Four Sectors of the U.S. Labor Force by Percent 1860-1980

(using median estimates of information workers)



Source: Marc Porat, *The Information Economy: Definition and Measurement*, Office of Telecommunications Special Publication 77-12 (1), May 1977

A number of the projects in the cluster are providing education and training to prepare adults for the information sector. The verbal, mathematical, and computer literacy training provided by the READI project will help rural adults qualify for new jobs in the information sector. Boston College, through its seminars and counseling, and the University of Michigan, through its Employment Transition Program, provide workers in changing industries (manufacturing and industrial) with information about

retraining and employment opportunities in other sectors, including the information sector.

The TECPLAY project, St. Louis Community College's Metropolitan Re-Employment Project, and Portland Community College's Small Business Development Center Model provide skills to individuals that will assist them in obtaining jobs or starting small businesses in the information as well as other sectors.

Service sector growth. As the graph also shows, the service sector surpassed the industrial sector in the late 1970's, becoming the second largest employer in the U.S. economy. Since most service jobs involve relatively unsophisticated, commonplace skills and knowledge, the service sector has always been the natural marketplace employer of last resort. The ready supply of displaced workers with limited employable skills will foster low wages in the service sector, and thus promote the general growth of service-related business. It should be noted that millions of people use service employment as a temporary transitional phase in their careers, while they acquire some form of retraining to qualify for work in more rewarding sectors of the economy. A number of the FIPSE cluster projects are providing information and skills to individuals for service sector jobs or for starting small businesses in the service sector.

Industrial sector shrinkage. The graph shows that employment in the industrial sector has been declining since the early 1950's, and the decline is expected to continue through the next decade. Due in large part to increased automation/robotization, improved operational procedures, and competition from developing countries with "cheap" labor costs, this sector is expected to employ only 11-12 percent of the workforce by the mid 1990's. The automobile, steel, clothing, and supportive industries have

been affected by the growing trend of increased importing which has led to large numbers of displaced or dislocated industrial workers. Boston College, the University of Michigan, and St. Louis Community College have developed programs to respond to the needs of displaced industrial workers.

The Boston College project ties new training for industrial and manufacturing workers to an understanding of structural changes in technology and the organization of industry. The training is linked to economic revitalization in the region. The University of Michigan project offers a wide array of information and services to industrial workers facing displacement, including labor market information, skills and interest assessment, retraining information, educational information, support services, and peer support networks. St. Louis Community College through a partnership of business, education, labor, and government provides outplacement services to laid-off workers. Services include counseling, retraining, job search, interviewing, job information, and career planning. The project also provides services to businesses anticipating lay-offs. The NAPIC project fosters partnerships between Private Industry Councils and postsecondary educational institutions in six local communities to plan and implement job training programs for dislocated workers. At each site, services provided through the partnerships include labor market information, support services, or education and retraining for dislocated workers.

Boom in self employment. Self employment, which reached a low of seven percent in 1970, has been on the rise since then and is expected to continue to grow. The growth of the information and service sectors will reinforce this rise through information and service entrepreneurs. It is projected that self employment will double by the year 2000 from its low

point of 1970. This growth is due, in part, to changes in other sectors. As mid-level, mid-career workers are laid off or not promoted they will be "forced" to enter self employment in new venture enterprises. The computer software and support industries are a clear example of this growing phenomenon.

The Portland Community College Small Business Development Center model, developed through a consortium of business, education, and government, is providing multiple services to small business entrepreneurs. In addition to an innovative curriculum in small business skills, the Center provides rental space for small businesses and office and support services. Small business entreprenuers are educated, trained, and assisted by the Center in developing their own small businesses.

Technology. Robotization, CAD/CAM systems, and other new manufacturing/industrial technologies are projected to eliminate 5-7 million jobs (mostly blue collar) before the turn of the century. Information/communication technologies, are expected to eliminate 7-12 million white collar positions. The total loss of jobs is projected to be between 15 and 20 million by the year 2000. At the same time, the production of these new technologies will create 2-3 million new jobs, while positions related to the maintenance and repair of these new technologies will generate an additional 4-5 million high technology service positions. Thus, the replacement of lost with new jobs is not projected to be one-for-one. The introduction of these new applied technologies into the workplace generates greatly increased demands for training and development in two ways: 1) displaced workers must be retrained for re-employability; and 2) employees who are provided with new technologies must be trained in their use.

A number of the FIPSE cluster projects have responded to this increased demand. The Boston College, the University of Michigan, and the St. Louis Community College projects are providing retraining or information on retraining for displaced or "at risk" workers. The University of Idaho is offering computer literacy to rural adults through its READI project. San Diego State University, through innovative refresher and updating courses, is offering educational upgrading to scientifically trained personnel in local high technology industrial firms. Late afternoon and evening postbaccalaureate certificate programs in Recombinant DNA Technology and Modern Analytical Chemistry are examples of state-of-the-art educational opportunities recently designed and now available for professional development to scientists in the community.

The New Hampshire Continuing Education Network involves businesses and industry in the active planning, decision making, and coordination of education programs in the state. Twenty-two colleges have joined together to offer education and training programs to workers both "on" and "off" campus. A request for proposal process was developed to provide information on the course or program being requested. Many of these were in new technology areas.

The New England Board of Higher Education is educating state legislators on the critical importance of higher education in responding to economic development based on high-technology industries and knowledge intensive services. The ultimate goal of the project is more enlightened financial policies developed by state legislatures in the future. Policies that will assist students, higher education R&D, and economic development.

Rio Salado Community College, responding to industry's needs for trained microprocessing technicians, developed a one-year AA degree program for women and minorities. The program combines technical skill development with general skill development and is delivered at the work-site by industry based faculty. Counseling and support services are also provided to participants in the program. Milwaukee Area Technical College worked closely with local businesses in developing their programs in Computer Integrated Manufacturing, Computer Assisted Manufacturing, and Computer Assisted Design. Four major project disciplines were initiated: industrial engineering, numerical control, computer science, and automated manufacturing. New competency based courses were developed as a result of the new partnerships with technological industries.

In setting the context we have looked at a cluster of projects which offer alternative postsecondary education responses to demographic and economic shifts. We have shown how these projects are models in themselves as well as examples for setting policy directions that offer innovative options (some new, some reformulations) for postsecondary education responses to the demographic and economic shifts discussed.